

HIV Risk Behavior Reduction following Intervention with Key Opinion Leaders of Population: An Experimental Analysis

ABSTRACT

Background and Purpose. Peer norms influence the adoption of behavior changes to reduce risk for HIV (human immunodeficiency virus) infection. By experimentally intervening at a community level to modify risk behavior norms, it may be possible to promote generalized reductions in HIV risk practices within a population.

Methods. We trained persons reliably identified as popular opinion leaders among gay men in a small city to serve as behavior change endorsers to their peers. The opinion leaders acquired social skills for making these endorsements and complied in talking frequently with friends and acquaintances. Before and after intervention, we conducted surveys of men patronizing gay clubs in the intervention city and in two matched comparison cities.

Results. In the intervention city, the proportion of men who engaged in any unprotected anal intercourse in a two-month period decreased from 36.9 percent to 27.5 percent (–25 percent from baseline), with a reduction from 27.1 percent to 19.0 percent (–30 percent from baseline) for unprotected receptive anal intercourse. Relative to baseline levels, there was a 16 percent increase in condom use during anal intercourse and an 18 percent decrease in the proportion of men with more than one sexual partner. Little or no change was observed among men in the comparison cities over the same period of time.

Conclusions. Interventions that employ peer leaders to endorse change may produce or accelerate population behavior changes to lessen risk for HIV infection. (*Am J Public Health* 1991;81:168–171)

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Introduction

Experience in many health promotion areas supports the importance of social influence as a determinant of population risk behavior patterns.^{1–3} Gay men who successfully implement risk reduction report greater peer support for behavior change than their unsuccessful counterparts,^{4–6} while beliefs that one's friends have already made precautionary changes and that these changes will be well accepted predict compliance with acquired immunodeficiency syndrome (AIDS) risk reduction recommendations.^{5,6} Reductions in high-risk sexual behavior among homosexual men in urban centers appear linked to new norms in the gay communities of large cities which discourage high-risk activities such as unprotected anal intercourse and encourage precautionary steps such as condom use or other safer sex modifications.^{7,8}

Persons frequently seek the advice of friends concerning steps needed to reduce risk for AIDS.⁹ Diffusion of innovation theory posits that trends and innovations are often initiated by a relatively small segment of opinion leaders in the population.¹⁰ Once visibly modeled and accepted by natural opinion leaders, innovations then diffuse throughout a population, influencing others. The purpose of this investigation was to experimentally test an AIDS prevention intervention based on diffusion of innovation/social influence principles. Because HIV (human immunodeficiency virus) risk behavior levels remain high among gay men in small cities^{5,6,11} and because geographically isolated communities constitute compact environments where it is feasible to ex-

perimentally evaluate community-level intervention of this kind, the project targeted homosexual men in small cities.

Methods

Setting and Baseline Survey

The study was conducted late in 1989 in Biloxi and Hattiesburg, Mississippi, and Monroe, Louisiana, selected because they are relatively small (populations of 50,000 to 75,000 residents), separated by at least 60 miles from one another or from any other city of larger size, and because each city had one or two large gay bars. Due to the geographical isolation of the cities and the paucity of other meeting places, these clubs tend to attract large, stable crowds of homosexual men and serve as the primary social setting in each city's gay community. An earlier survey of men patronizing clubs in these cities revealed alarmingly high rates of high-risk sexual behavior.⁶ AIDS incidence data for the cities are not compiled, but data from local health department HIV testing sites indicate relatively low seroprevalence rates (approximately 2 percent) among all men who seek testing in the cities. This suggests that HIV infection prevalence is still moderate but will increase unless behavior changes among gay men are quickly implemented.

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To obtain baseline data on population AIDS risk characteristics, men entering each city's clubs were initially surveyed over three consecutive nights. The survey measure was completed anonymously and individually at small tables located near the club entrances; men who completed the questionnaire on one night did not complete it again during the same three-night sampling period. In addition to demographic information, the measure assessed:

- knowledge about AIDS risk behaviors and risk reduction steps using a 23-item true/false test¹²;
- perceived social norms concerning the acceptability of adopting safer sex precautions measured by endorsement on 5-point Likert scales of five statements (example: "My gay male friends insist on using condoms when they have intercourse") and yielding scores of 5 to 25^{5,6}; and
- personal sexual behavior occurring over the past two months, including number of occurrences and different partners for unprotected insertive and receptive anal intercourse, anal intercourse with condoms, and other low-risk practices (frottage, mutual masturbation, and similar activities). This measure was pilot tested extensively and has been successfully used in prior surveys of gay men's risk behavior.^{5,6,11}

The same survey procedure was repeated in a second three-day sampling period four months later at each club in each city to establish baseline stability in population risk characteristics. A preliminary review of survey data revealed that AIDS risk knowledge scores were consistently high among men in each city ($M = 21$ of 23 items answered correctly) so basic knowledge items were deleted from subsequent surveys. Counts were made of the total number of men who entered clubs to determine the proportion of the entire population successfully surveyed.

Study Design and Intervention Procedures

Following baseline population assessments in all cities, one community (Biloxi) was randomly selected to receive the intervention while the other two communities served as comparison cities. The comparison cities received no specific intervention, although AIDS prevention posters and brochures were generally available in gay clubs in the cities. No significant differences in population risk behavior were found between the two comparison cities.

In the intervention city, a three-stage process identified, trained, and then contracted with popular opinion leaders among gay men to endorse behavior change to their peers.

Identification of Opinion Leaders: To identify key popular people, four club bartenders familiar with population members were trained to observe social interaction patterns within the city's gay clubs. Each made unobtrusive behavioral observations in the clubs for one week, recording first names and a physical identifier for 30 persons observed to socialize and be greeted positively most often by men in the clubs. Recording sheets were cross-matched for repeated mention; 36 of a total of 82 names received multiple nominations and were considered key popular people. Twenty-two were located, entered in the program, and asked to invite one friend also considered to be highly popular with gay men and not already a participant. The total training group consisted of 39 men and four women with a mean age of 30 years and a mean education level of 13.8 years; 91 percent of the group was White and 9 percent African-American or Hispanic.

Training the Opinion Leaders: The training consisted of four weekly, 90-minute group sessions led by a male and a female leader. In session one, the leaders reviewed basic epidemiology of HIV infection, high-risk behavior, and precautionary changes needed to reduce risk and misconceptions concerning risk. They discussed the steps that can be used to successfully implement risk reduction, including: keeping condoms readily available if sexually active; avoiding excessive intoxicant use before sex; discussing precautions in advance with sexual partners; resisting coercions to engage in high-risk practices; and self-reinforcing for behavior change efforts.

Session two described characteristics of effective health promotion messages: sensitizing others to the potential threat of AIDS; stressing that HIV infection can be prevented by behavior change; identifying specific behavior changes needed to reduce risk; suggesting strategies for implementing these changes; using self as an example in order to avoid a "preachy" tone (i.e. beginning statements with "I am learning to . . ." rather than "You should . . ."); and personally endorsing the positive value and desirable benefits of behavior change.

In the third session, leaders modeled conversational examples which incorporated the characteristics discussed in ses-

sion two. Following discussion of the enactments, participants role-played how they would initiate conversations, incorporating these message characteristics. Group leaders and assistants observed this social skill rehearsal, providing feedback and suggestions. After becoming proficient in the role-plays, each participant identified four gay male friends with whom s/he could initiate an endorsement conversation in the next week. Monitoring forms were provided for recording descriptions of these conversations.

Session four reviewed outcomes of the real-life conversations; most participants reported positive reactions from others. The leaders and participants then problem-solved persons, settings, strategies, and times which would afford opportunities to initiate additional conversational contacts with other peers. All members agreed to initiate and monitor at least 10 more peer conversations over the next two weeks. The session concluded with further discussion emphasizing the participants' important role in stressing the benefits of behavior changes to prevent HIV infection among gay men in their own community. Of the 43 opinion leaders who began the intervention, 35 attended all the sessions.

Later review of participants' self-monitoring forms indicated that 371 peer conversations were monitored over the two-week period. This probably underestimates the number of conversations which actually took place because peer conversations were likely to have continued beyond the monitoring phase. In addition, before and after the training program, each opinion leader was asked to role-play standard, simulated peer educational conversations. Ratings of the tape recorded role-plays were made by trained judges, naive to whether practice conversations were pre- or postintervention. These rates revealed that, after training, the opinion leaders more frequently exhibited skills taught in the program (data available on request to author). These checks confirm social skill acquisition and conversational assignment compliance by the opinion leaders.

To stimulate opportunities for initiating peer conversations, posters with a traffic light logo (red, yellow, and green circles) but no printed explanation were placed throughout the clubs shortly before the end of the intervention. Each training participant was given a small lapel button with the same logo and asked to wear it. Participants reported that this cueing device led many people to inquire about the

TABLE 1—Measures of Behavior in Surveyed Populations Prior to Intervention and Behavior Change Postintervention

Behavior Characteristics ^a	Preintervention		3–6 Month Changes		Difference (95% CI)
	Intervention City	Comparison Cities	Intervention City	Comparison Cities	
Percent of Respondents Engaging in:					
Any Unprotected Anal Intercourse	36.9	40.4	−9.4	−2.9	6.5 (6.4, 6.6)
Unprotected Receptive Anal	27.1	30.9	−8.1	−3.7	4.4 (4.3, 4.5)
Unprotected Insertive Anal	31.5	31.5	−9.6	+0.4	10.0 (9.9, 10.1)
Percent of Anal Intercourse Occasions Protected by Condoms:					
Any Anal Intercourse	48.8	54.5	+6.5	−6.1	12.6 (12.5, 12.7)
Receptive Anal Intercourse	50.4	55.4	+8.0	−7.8	15.8 (15.7, 15.9)
Insertive Anal Intercourse	49.2	54.7	+5.2	−5.1	10.3 (10.2, 10.4)
Percent of Respondents Reporting Multiple Sexual Partners	42.4	38.2	−7.8	+1.9	9.7 (9.6, 9.8)

^aIn two months prior to survey point.

TABLE 2—Percentage Distribution for Number of Sexual Partners for Unprotected Anal Intercourse in Prior Two Months: Intervention and Comparison Populations Before and After Intervention

Number of Partners	Intervention City		Comparison Cities	
	Pre	Post	Pre	Post
0	70.7	80.0	68.8	70.9
1	7.1	5.2	7.9	8.4
2	4.2	3.4	3.5	3.7
3	2.0	1.0	4.0	3.4
4	1.9	1.3	6.5	6.6
5	2.6	0.9	2.5	4.0
6	2.9	1.2	1.3	0.8
7+	8.6	7.1	5.5	2.2

meaning of the symbol. These questions, in turn, stimulated opportunities to explain precautionary changes from the traffic light scheme (high-risk, moderate-risk, low-risk) and endorse these changes in the conversational style that was practiced in training. The lapel buttons also served as visual cues which reinforced the endorsement of behavior change by well-known and popular individuals.

Several months after the intervention's completion, participants were re-contacted by telephone, encouraged to continue their peer education conversations, and commended for their continued efforts.

Determining Change in Population Risk Characteristics

Surveys of all male club patrons in all cities were repeated in the same manner as at baseline three months and again six months after the end of the training period. Responses of training participants were excluded. Intervention city men reported

they were approached to initiate a mean of 7.1 conversations, demonstrating that the conversations encouraged in the training program occurred frequently.

Results

A total of 659 surveys were completed at the two baseline survey periods (intervention city N = 328, comparison cities N = 331) and 608 men completed surveys at the two postintervention periods (intervention city N = 278, comparison cities N = 330). This was an average of 81 percent (range = 68 to 88 percent) of all men patronizing each city's clubs during the survey periods. Between 24 and 47 percent of the men who completed measures on one occasion were the same men who completed them earlier; over 70 percent of respondents lived in the city where the survey was conducted. The mean age of all men surveyed was 29.1 years; the mean education level 14.9 years; 86 percent of men were White and 14 percent

African-American or Hispanic. There were no significant differences between intervention and comparison city populations, nor were there systematic changes over time within a city's surveyed population, for these characteristics.

Table 1 presents behavioral characteristics for both the intervention and comparison cities before and following intervention with 95% CIs of the differences in behavior change. For purposes of brevity, results of the two baseline surveys and the three- and six-month postintervention surveys are averaged as a single figure. Populations in the intervention and comparison cities were initially comparable in risk characteristics. At the postintervention surveys, the proportion of men who engaged in unprotected anal intercourse decreased by about 30 percent from their initial levels. Much less change was evident in the population of men in the comparison cities. Similarly, there was an increase in proportion of all anal intercourse occasions when condoms were used only in the intervention city. Finally, the intervention produced a decrease in the proportion of intervention city men who reported having multiple sexual partners in the preceding two months, an effect not found in the comparison cities.

Table 2 shows the percentage distribution for number of sexual partners in the intervention and comparison populations before and after intervention. These results show some shifts reflecting an increased proportion of intervention city men who had either one or no sexual partner from pre- to postintervention and slight general decreases in the proportion of men who had two or more partners (Z

= 1.66, $p < .05$ for nonparametric Wilcoxon signed rank test).

Survey responses of the male opinion leaders, examined separately, showed that in the two months before training, 39 percent of opinion leaders engaged in unprotected anal intercourse; in the postintervention survey, 24 percent engaged in this practice.

Distinctive changes in social norm measure scores were not associated with the intervention; only a general and modest pre- to posttest increase in scores was found (from $M = 15.6$ to 17.0). However, intervention city men who refrained from unprotected anal intercourse reported in posttest surveys receiving health message conversations from peers more ($M = 6.3$ conversations) than men who still engaged in unprotected receptive anal intercourse ($M = 3.5$) or in any unprotected anal intercourse ($M = 4.8$).

Discussion

To the best of our knowledge, this constitutes the first report of an experimentally controlled study evaluating a community-level field test of an intervention for HIV risk reduction. This study found that engaging key opinion leaders popular with gay men in small cities to serve as behavior change endorsers to their peers, produced reductions in the proportion of men in the population who engaged in high-risk activities and produced concomitant, population-wide increases in precaution-taking. The magnitude of these shifts compares favorably to those commonly found following mass, community-based population intervention for other health behavior problems such as cigarette smoking and cardiovascular risk reduction. This suggests a cost-effective HIV prevention model which may be of benefit in interventions with gay men, intravenous drug users, adolescents, and other groups.

Several findings in this study were of particular interest. First, AIDS risk behavior knowledge scores were high among men in each city even before intervention, suggesting that lack of knowl-

edge about AIDS was not a critical dimension in the populations studied and that intervention methods which induce behavior change implementation and social acceptability of changes are needed. Second, while we anticipated that the intervention would alter perceptions of social norms, the norm measure did not reflect changes parallel to the population behavior shifts. Generalized changes in sexual behavior may precede peer norm changes rather than cause the initial adoption of risk reduction. In that case, elements of the intervention responsible for population behavior change may have included frequent safety prompts delivered by credible peers, conversational dissemination of suggestions for implementing precautionary changes, legitimization of making risk reduction changes by opinion leaders, or other factors.

While the study's results are highly promising, a number of cautions must be raised. We studied only men who patronized clubs and relied on self-reports of behavior. However, the geographical isolation of the study cities, the stability of club populations over time, and the function of clubs as the major social setting for gay men in these communities supports the relevance of data collection at these sites. While self-report behavior measures are essential in large-scale HIV risk behavior research, other data corroborating population behavior change—such as changes in community STD (sexually transmitted disease) incidence, condom purchasing patterns, or HIV testing requests and infection incidence—are needed to substantiate future conclusions about intervention impact. Finally, only a small number of cities were involved in this demonstration. Wider-scale clinical field trials of such experimental models in multiple cities and with larger populations are needed to establish their generalizability. □

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